DOCUMENT RESUME

ED 051 988 SE 007 161

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TITLE	Family Key to the Fish Commonly Taken on Board the Orange County Schools Marine Science Floating Laboratory.
INSTITUTION	California Univ., San Diego.
PUB DATE	69
NOTE	31p.
EDRS PRICE	EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS	*Biology, College Science, *Oceanology, Reference Materials, *Secondary School Science, *Taxonomy, *Zoology

ABSTRACT

Provided is a dichotomous key to the families of marine fish commonly taken aboard the Orange County Schools Marine Science Floating Laboratory. This key has been designed for use by junior and senior high school students. Diagrams and drawings are provided which indicate diagnostic characteristics of various members of the fish families included. This work was prepared under an ESEA Title III Contract. (RS)

ED051988

FAMILY KEY TO THE FISH COMMONLY TAKEN ON BOARD

THE ORANGE COUNTY SCHOOLS

MARINE SCIENCE FLOATING LABORATORY

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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WORK HEREIN SUPPORTED BY
ESEA TITLE III - PROJECT NO. 67-3799

REVISED MARCH 1969

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INTRODUCTION

This Key is designed for Junior and Senior high school students participating in the Orange County Marine Sciences program. Specialized terminology has been avoided wherever possible but a basic knowledge of external morphology is necessary. In most instances small explanatory drawings are included in the key where difficulties may be encountered.

This is a dichotomous key, meaning for each character called for there are two possible statements, only one of which is correct. In order to determine which character is correct both choices should be read and the description that best fits the character in question chosen.

This key was designed for the identification of fresh fish and should be used with caution when identifying preserved specimens, since there is a tendency to lose their original coloration. It should also be noted that this key will work only for those fish included in the key, therefore, do not try to place a fish not in the key into a specific family or genus as a mistake may be made.

While this key has already been modified several times it is not anticipated that it is perfect and, for the benefit of future students, suggestions for improvement are solicited.

Special thanks should be given to the California Department of Fish and Game and particularly to Miller, Gotshall and Nitsos for allowing extensive reproductions of drawings from their booklet, A Field Guide to Some Common Ocean Sport Fishes of California.

FAMILY KEY TO THE FISH COMMONLY TAKEN ON BOARD

THE ORANGE COUNTY SCHOOLS MARINE SCIENCE FLOATING LABORATORY

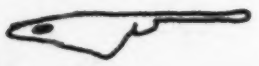
1.

a. Skeleton cartilaginous, multiple gill openings. (The sharks, rays and skates) (2)

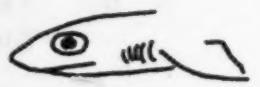
b. Skeleton bony, single gill opening. (Bony Fishes) (10)

2.

a. Body compressed dorso-ventrally; gill openings on underside of the body or in a notch behind the pectoral fins. (3)

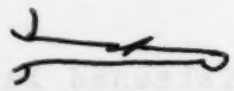


b. Body typically sharklike; gill openings on the side of the head. (7)

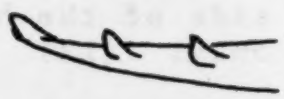


3.

a. Tail with a stinger. (4)



b. Tail without a stinger. (5)



4.

a. Tail long and whiplike, about as long or longer than the body. *MYLIOBATIDAE* - Eagle Sharks.

b. Tail not as above. *DASYATIDAE* - Stingrays.

5.

a. Body rough to the touch. (6)

b. Body smooth to the touch. *TORPEDINIDAE* - Electric Rays.

6.

a. Mouth terminal, with very sharp teeth. *SQUATINIDAE* - Angel Sharks.

b. Mouth ventral, no sharp teeth. *RHINOBATIDAE* - Guitarfishes.

7.

a. Spines in front of the dorsal fins. (8)

b. No spines in front of the dorsal fins. (9)

8.

a. Body stout; second dorsal fin in front of anal fins; slight bulge in head over eyes; color brownish with scattered black spots. *HETERODONTIDAE* - Horn Sharks.

b. Body slender; no anal fin; no bulge in head over eyes; color slate gray or brownish. *SQUALIDAE* - Dogfish Sharks.

9.

a. Body stout; brownish in color and tinged with dirty yellow, densely covered with small dark spots. *SCYLIORHINIDAE* - Cat Sharks.

b. Body slender; either solid brown, gray or gray with black saddles on back and black splotches on side. *CHARCHARHINIDAE* - Requieum Sharks.

10.

a. Ventral fins present. (11)

b. Ventral fins absent. *STROMATEIDAE* - Butterfishes.

11.

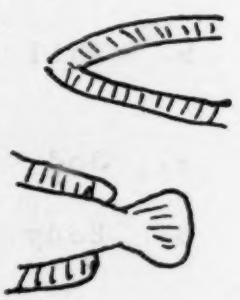
a. Body flattened laterally; both eyes on the same side of the head, body colored on one side only. (12)

b. Body slightly flattened or not flattened; eyes on opposite sides of the head; color on both sides of the body. (14)

12.

a. Dorsal, anal and caudal fin continuous. *CYNOGLOSSIDAE* - Tonguefishes.

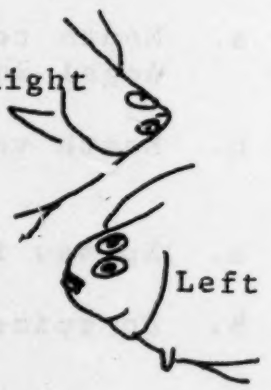
b. Dorsal, anal and caudal fins distinct. (13)



13.

a. Both eyes on the right side of the head. *PLEURONECTIDAE* - Righteye Flounders.

b. Both eyes on the left side of the head. *BOTHIDAE* - Lefteye Flounders.



14.

a. Mouth minute, terminal, on a long, thin tube. *SYNGNATHIDAE* - Pipefishes and Seahorses.

b. Mouth not as above. (15)

15.

a. Ventral fins united to form a sucking disc. *GOBIIDAE* - Gobies.

b. Ventral fins separate, not united. (16)

16.

a. Ventral fins situated well in back of the pectoral fins. (17)

b. Ventral fins situated slightly in back of, under or in front of the pectoral fins. (20)

17.

a. Body scaleless or nearly so. *ARGENTINIDAE* - Argentines.

b. Body well scaled. (18)

18.

a. Mouth very large, with many sharp teeth that are easily depressed backwards when pushed in with a finger. *SYNODONTIDAE* - Lizardfishes.

b. Mouth fairly large, teeth, if present, very small. (19)

19.

a. With one dorsal fin, composed entirely of soft rays. *ENGRAULIDAE* - Anchovies.

b. With two dorsal fins, both composed solely of soft rays. *ATHERINIDAE* - Silversides.

20.

a. Ventral fins situated in front of pectoral fin, reduced to fleshy appendages on the chin or otherwise reduced in size to small stubs. (21)

b. Ventral fins situated very near the insertion of the pectoral fins, or normal size. (24)

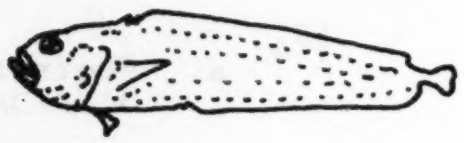
21.

a. Ventral fins reduced to a long fleshy structures on the underside of the chin. *OPHIDIIDAE* - Cusk-eels.

b. Ventral fins reduced, situated in front of pectoral insertion. (22)

22.

a. Body covered with photophores, small light producing organs that resemble small pearls. *BATRACHOIDIDAE* - Toadfishes.



b. Body not as above. (23)

23.

a. Dorsal, anal and caudal fin continuous. *ZOARCIDAE* - Eelpouts.

b. Dorsal, anal and caudal fins distinct. *CLINIDAE* - Clinids.

24.

a. Body armored with heavy, overlapping scales, head very bony. *AGONIDAE* - Poachers and alligatorfishes.

b. Body not heavily armored. (25)

25.

a. Anal spines absent. (26)

b. Anal spines present. (28)

26.

a. Dorsal fin deeply notched or two or three dorsal fins present. (27)

b. Dorsal fin continuous, of approximately equal height over its entire length. *BATHYMASTERIDAE* - Ronquils.

27.

a. Anal fin deeply notched. *GADIDAE* - codfishes and hakes.

b. Anal fin not deeply notched. *COTTIDAE* - sculpins.

28.

a. One anal spine. (29)

b. Two or three anal spines. (30)

29.

a. Cirri (fleshy flaps) over eyes. *HEXAGRAMMIDAE* - Greenlings.

b. No cirri over eyes. *SCIAENIDAE* - Drums.

30.

a. Two anal spines. (31)

b. Three anal spines. (33)

31.

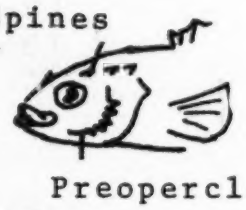
a. Color uniformly bright orange or black tinged with blue. *POMACENTRIDAE* - Damselfishes.

b. Color not orange or black tinged with blue and if orange, the color not uniform.

32.

a. Dorsal fin continuous, uniform in height. *BRANCHIOSTEGIDAE*- Tilefishes.

b. Two dorsal fins, or if one, it is deeply notched. *SCIAENIDAE* - Drums.



33.

a. Preopercle with four to seven distinct spines. (34)

b. Preopercle smooth, or if serrate, without four to seven distinct spines. (35)

34.

a. Dorsal spines very sharp. *SCORPAENIDAE* - Scorpionfishes and rockfishes.

b. Dorsal spines pliable. *ZANIOLEPIDAE* - Combfishes.

35.

a. Body laterally flattened, perch like. (37)

b. Body not flattened, bass like or elongate. (36)

36.

a. Dorsal spines very strong and sharp. *SERRANIDAE* - Sea basses.

b. Dorsal spines rather weak. *LABRIDAE* - Wrasses.

37.

a. Color slaty black with a bluish luster or bluish green fading to creamy white below. (38)

b. Color other than above, silver, reddish, with definite patterns or if black, with other colors present. (39)

38.

a. Color slaty black with bluish luster, whitish below. *SCORPIDAE* - Halfmoon.

b. Color bluish green, sometimes with two creamy white blotches near dorsal, fading below. *GIRELLIDAE* - Nibblers.

39.

a. Cirri (fleshy flap) over eyes. *HEXAGRAMMIDAE* - Greenlings.

b. No cirri over eyes. *EMBIOTOCIDAE* - Surfperches.

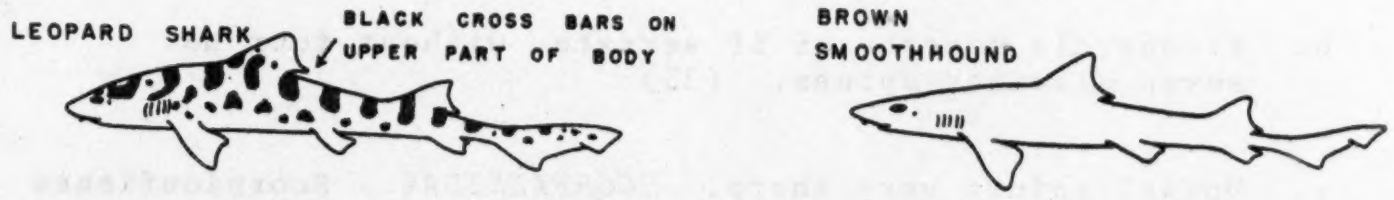
SPECIES KEYS

THE SHARKS, RAYS AND SKATES

Family *CHARCHARINIDAE* - requiem sharks

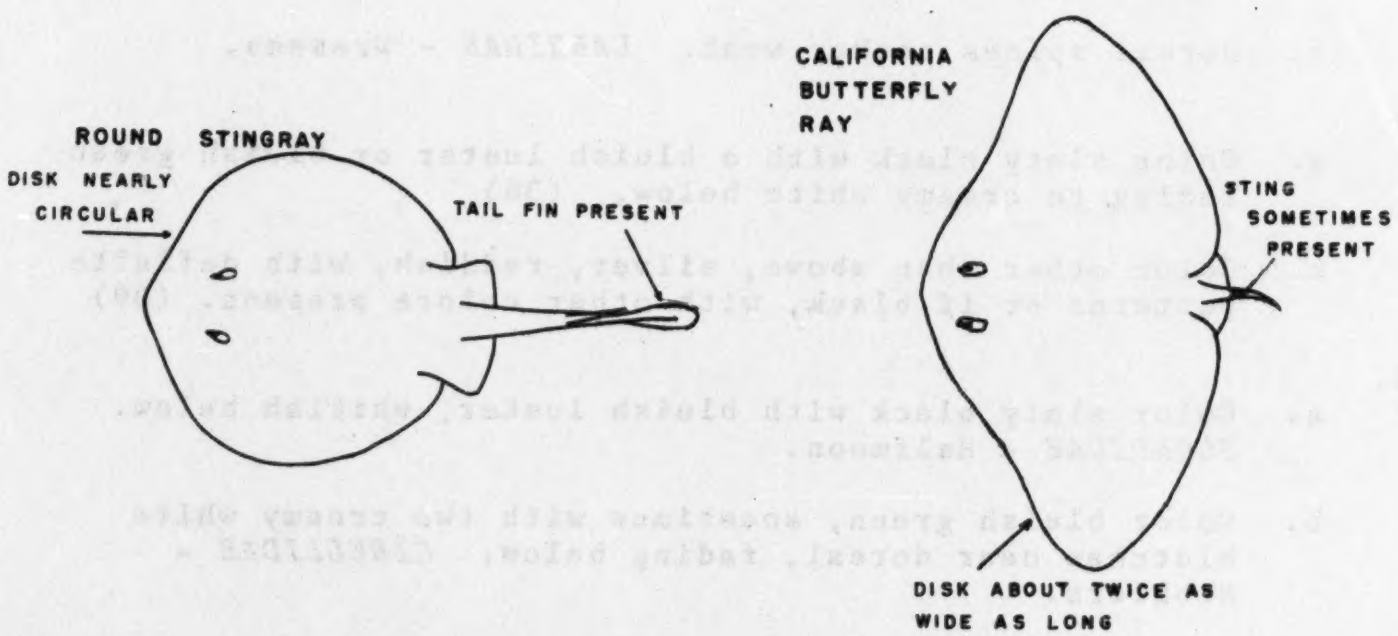
1 Body mottled, not of one color. *Triakis semifasciata* (Leopard shark)
Body of one color. 2

2 Body gray. *Mustelus californicus* (Gray smoothhound)
Body brown. *Triakis henlei* (Brown smoothhound)

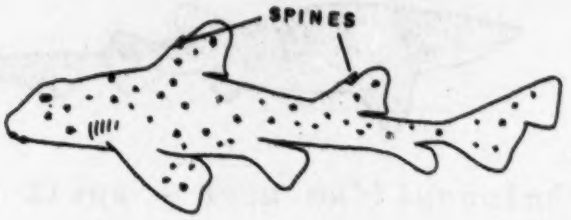


Family *DASYATIDAE*-stingrays

1 Body round. *Urolophus halleri* (Round stingray)
Body diamond shaped. *Gymnura marmorata* (California butterfly ray)

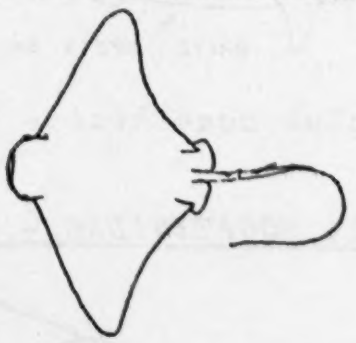


Family *HETERODONTIDAE* - horn sharks



Heterodontus francisci - Horn shark

Family *MYLIOBATIDAE* - eagle rays

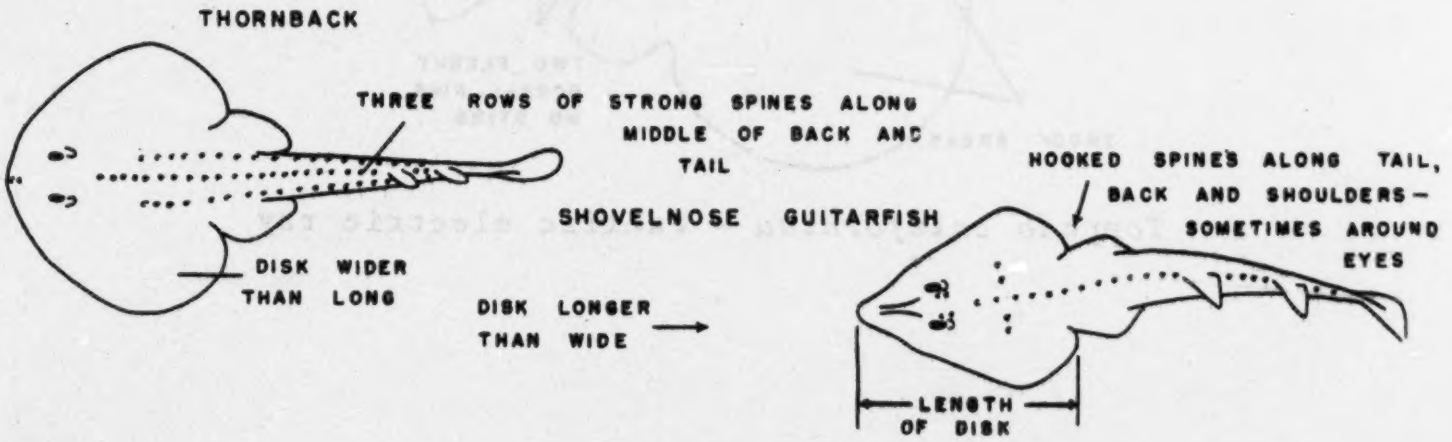


Myliobatus californicus - Bat ray

Family *RHINOBATIDAE* - guitarfishes

1 Three rows of spines running entire dorsal length of body. *Platyrhinoidis triseriata* - (Thronback)
Body more or less naked. 2

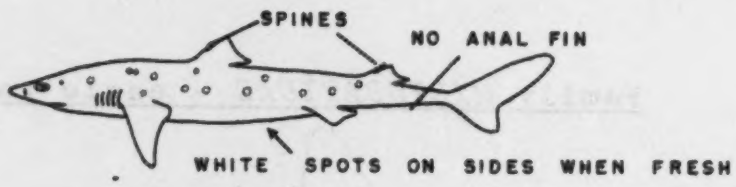
2 Back mottled, brownish black. *Zapteryx exasperata* (Banded guitarfish)
Back plain, brown. *Rhinobatus productus* (Shovelnose guitarfish)


THORNBACK
THREE ROWS OF STRONG SPINES ALONG MIDDLE OF BACK AND TAIL
DISK WIDER THAN LONG
DISK LONGER THAN WIDE
SHOVELNOSE GUITARFISH
HOOKED SPINES ALONG TAIL, BACK AND SHOULDERS — SOMETIMES AROUND EYES
LENGTH OF DISK

Family *SCYLIORHINIDAE* - cat sharks

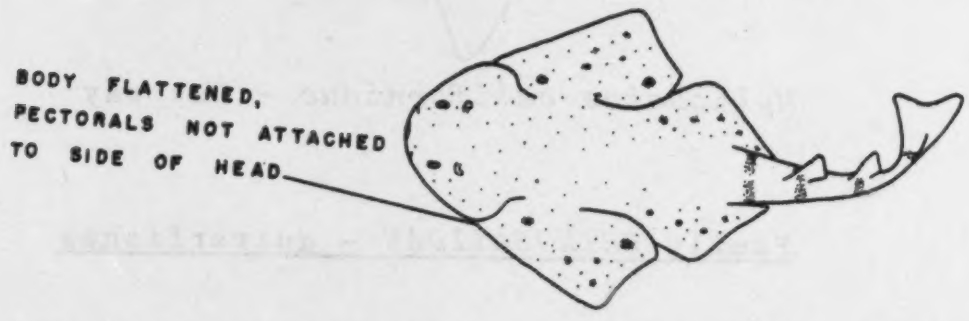
Cephaloscyllium uter - swell shark

Family *SQUALIDAE* - dogfish sharks



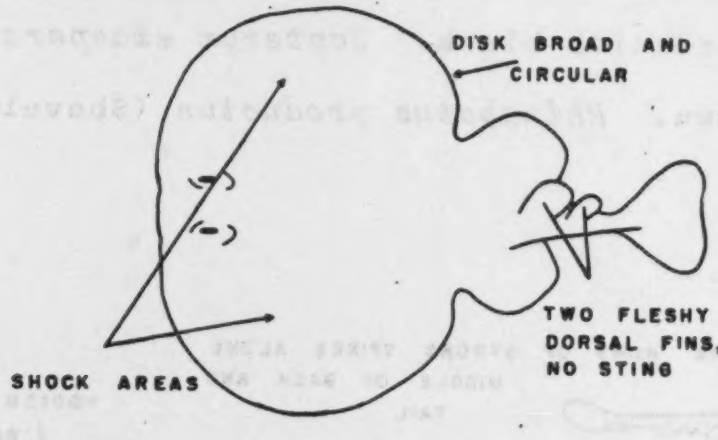
Squalus acanthias - Spiny dogfish

Family *SQUATINIDAE* - angel sharks



Squatina californica - Pacific angel shark

Family *TORPEDINIDAE* - electric rays



Torpedo californica - Pacific electric ray

BONY FISHES

Family *AGONIDAE* - poachers and alligatorfishes

1 [Tip of snout terminating in two short spines projecting forward; no movable, terminal rostral plate.
Agonopsis emmelane (Northern spearnose poacher)

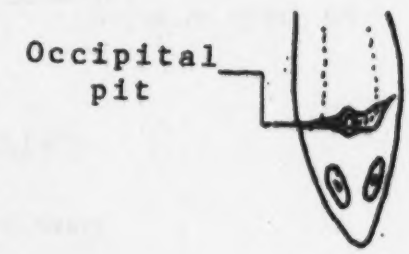
Tip of snout with a movable, terminal rostral plate bearing one or more upright spines. (2)

2 [An abrupt deep pit on top of head (occipital pit) no occipital spines.
Odontopyxis trispinosa (Pygmy poacher)

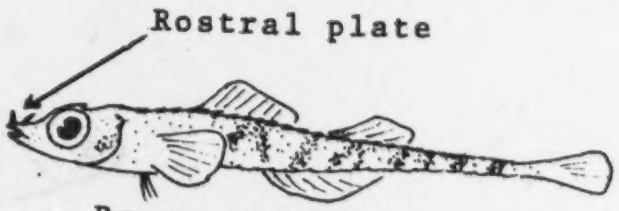
No distinct pit on top of head; two pairs of occipital spines.
Xeneretmus triacanthus (Bluespotted poacher)

(modified from Fitch, 1966)

Bluespotted Poacher



Northern spearnose poacher



Pygmy poacher

Family *ARGENTINIDAE* - argentines

Argentina sialis - Pacific argentine

Family *ATHERINIDAE* - silversides

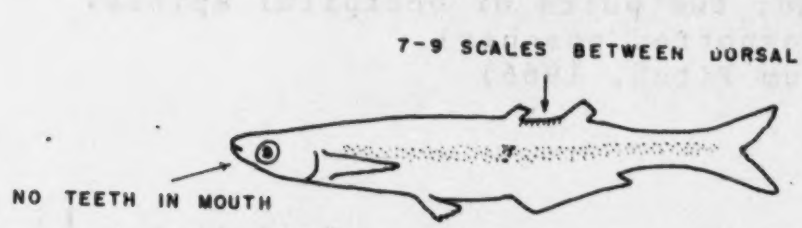
1 Jaws without teeth; first dorsal fin originating over anal fin and much nearer base of caudal than to snout. *Leuresthes tenuis* - California grunion

Jaws with teeth, first dorsal fin not as above. 2

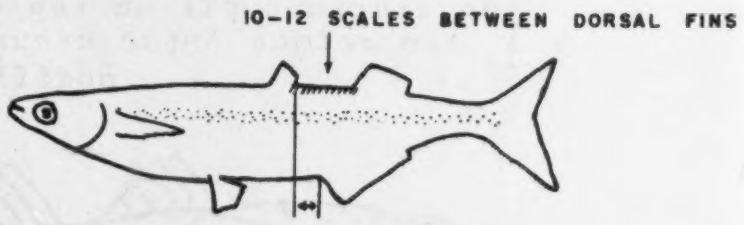
2 Teeth pointed, simple; first dorsal fin originating in front of middle of anal (which has a scaly sheath); Dorsal IX-I, 12. *Atherinopsis californiensis* - Jacksmelt

Teeth multified; first dorsal not as above, Dorsal V or VI-I, 11. *Atherinops affinis* - Top smelt

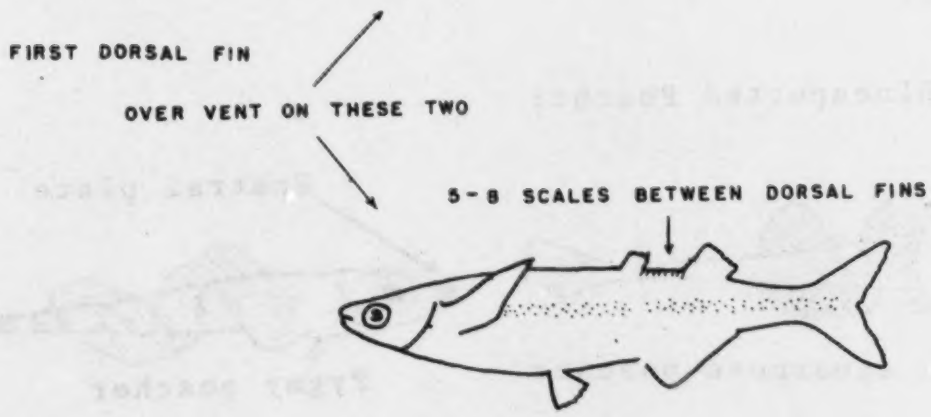
(modified from Collard, 1964)



California grunion

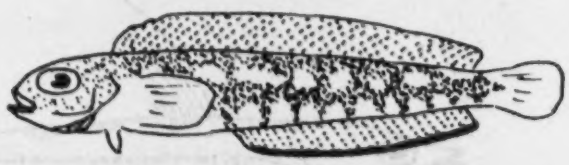


Jacksmelt



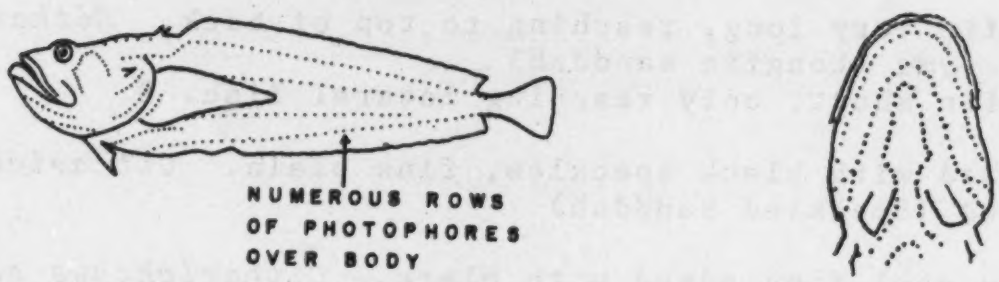
Topsmelt

Family *BATHYMASTERIDAE* - ronquils



Rathbunella hypoplectrus - Smooth ronquil

Family *BATRACHOIDIDAE* - toadfishes

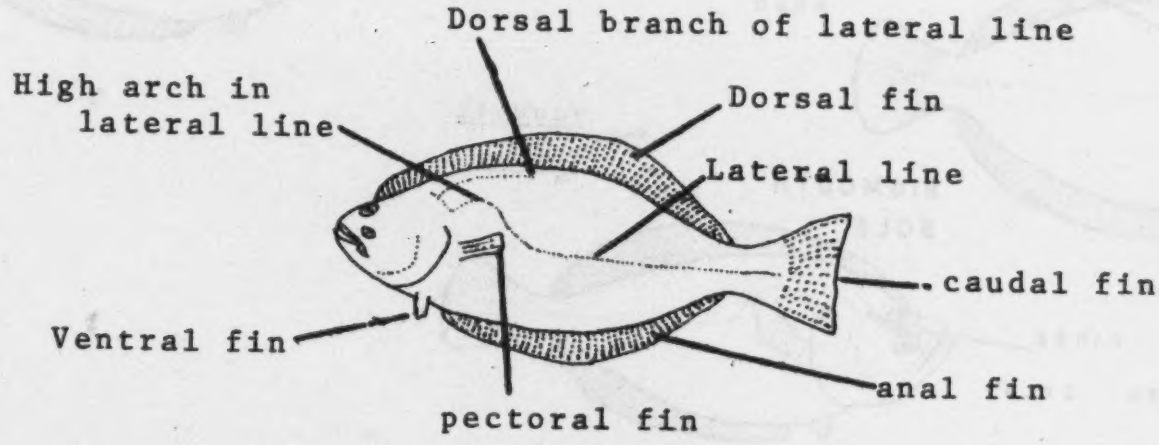


Porichthys myriaster - slim midshipman

Porichthys notatus - Northern midshipman

Family *BOTHIDAE* - lefteye flounders

HYPOTHETICAL FLATFISH



1 Teeth in mouth numerous, large and canine. *Paralichthys californicus* (California halibut)
Teeth may be canine, but are small. 2

2 Lateral line with an accessory arch. 3
Lateral line single. 4

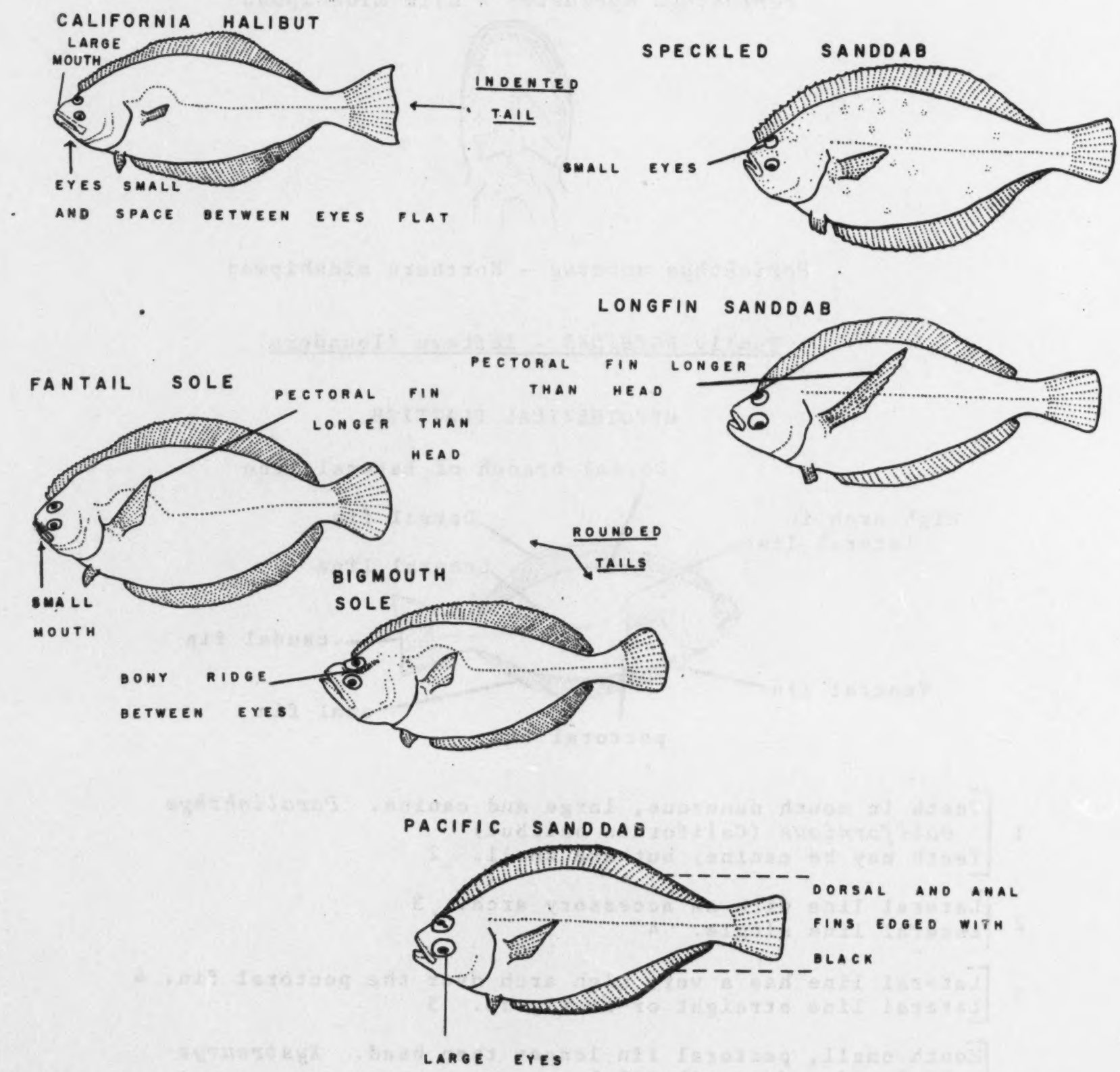
3 Lateral line has a very high arch over the pectoral fin. 4
Lateral line straight or nearly so. 5

4 Mouth small, pectoral fin longer than head. *Xystreurys liolepsis* (Fantail sole)
Mouth large, pectoral fin shorter than head. *Hippoglossina stomata* (Bigmouth sole)

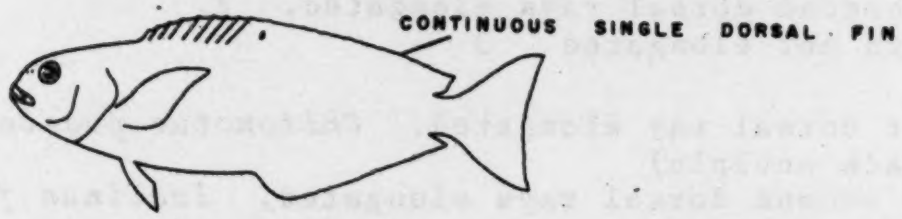
Family *BOTHIDAE* (continued)

5 Pectoral fin very long, reaching to top of back. *Citharichthys xanthostigma* (Longfin sanddab)
Pectoral fin short, only reaching lateral line. 8

6 Body covered with black speckles, fins plain. *Citharichthys stigmaeus* (Speckled sanddab)
Dorsal and anal fins edged with black. *Citharichthys sordidus* (Pacific sanddab)



Family *BRANCHIOSTEGIDAE* - tilefishes



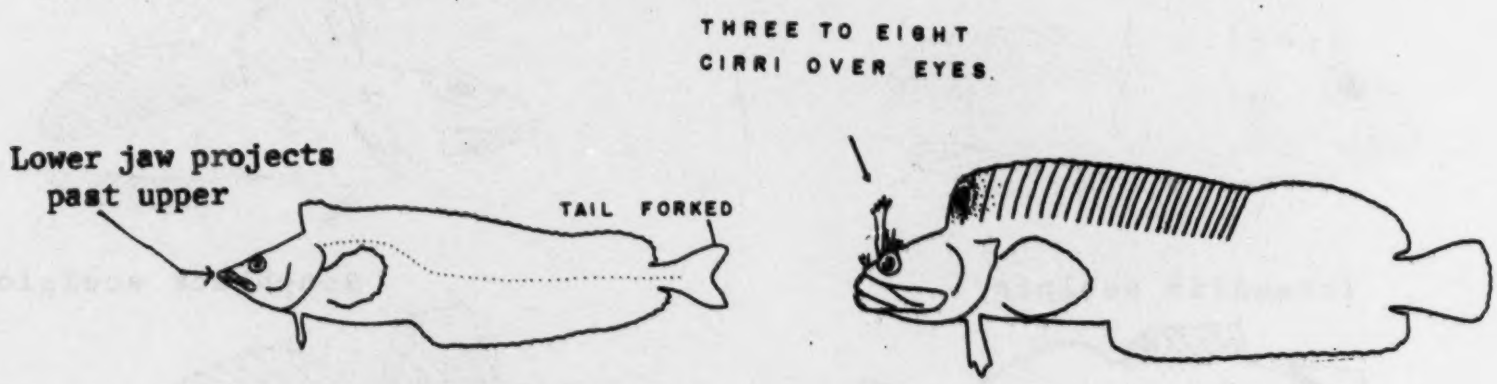
Caulolatilus princeps - ocean whitefish

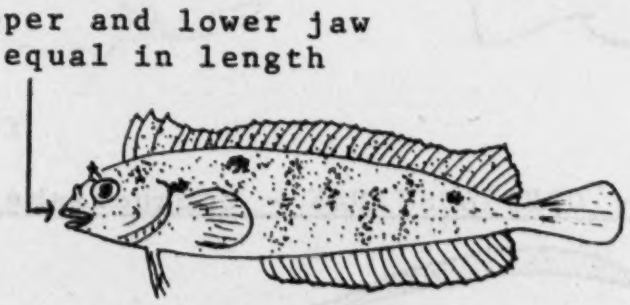
Family *CLINIDAE* - clinids

1 [Mouth extends well past eye. 2
  [Mouth may extend to, but not beyond eye. 3

2 [One ocellus (spot) on front part of dorsal fin. *Neoclinus uninotatus* (Onespot fringehead)
  [Two ocelli on the front part of the dorsal fin. *Neoclinus blanchardi* (Sarcastic fringhead)

3 [Lower jaw projects past upper jaw. *Heterostichus rostratus* (Giant kelpfish)
  [Lower jaw does not project past upper jaw. *Gibbonsia elegans* (Spotted kelpfish)





Spotted kelpfish

Family *COTTIDAE* - sculpins

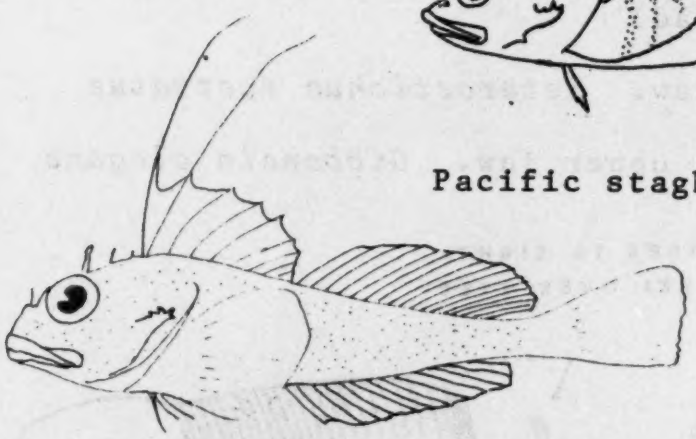
1
- First or second dorsal rays elongated. 2
- Dorsal rays not elongated. 3

2
- Only first dorsal ray elongated. *Chitonotus pugetensis.* (Roughback sculpin)
- First and second dorsal rays elongated. *Icelinus filamentosus* (Threadfin sculpin)

3
- Very prominent cirri over eyes. *Scorpaenichthys marmoratus* (Cabezon)
- Cirri, if present, not very prominent. 4

4
- Yellow or yellow and black coloring under chin. *Icelinus quadriseriatus* (Yellowchin sculpin)
- Cream colored under chin. *Leptocottus armatus* (Pacific staghorn sculpin)

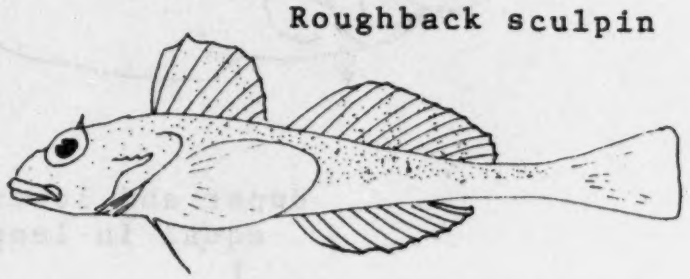
Pacific staghorn sculpin



Threadfin sculpin

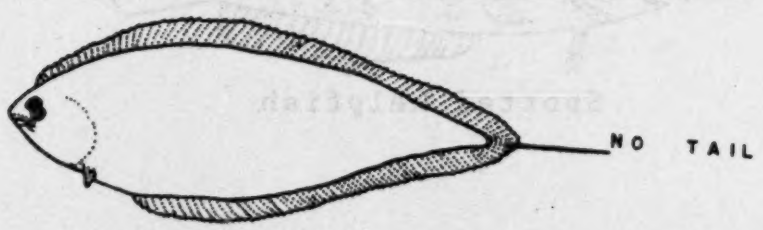
Roughback sculpin

Cabezon



Yellowchin sculpin

Family *CYNOGLOSSIDAE* - tonguefishes



Symphurus atricauda - California tonguefish

Family *EMBIOTOCIDAE* - surfperches

1 — Black triangle at base of pectoral fin. 2
No black triangle at base of pectoral fin. 3

2 — Two dark areas under dorsal fin. *Micrometrus minimus* (Dwarf perch)
No dark areas under dorsal fin. *Micrometrus aurora* (Reef perch)

3 — Body color dark, black, brown or a mixture thereof. 4
Body color not very dark; color light silver blue or silver or pink above fading below. 7

4 — Body color black to brown with orange, red and blue flecks on scales. 5
No orange, red or blue flecks on body; scales sometimes tipped with black. 6

5 — Vertical bars on body, lips yellow. *Embiotoca jacksoni* - (Black perch)
Vertical bars on upper body, with horizontal bars on lower body. *Hypsurus caryi* - (Rainbow seaperch)

6 — Dark vertical bars on side. *Amphistichus argenteus* (Barred surfperch)
Two yellow bars on side, obscured in males during breeding season. *Cymatogaster aggregata* - (Shiner perch)

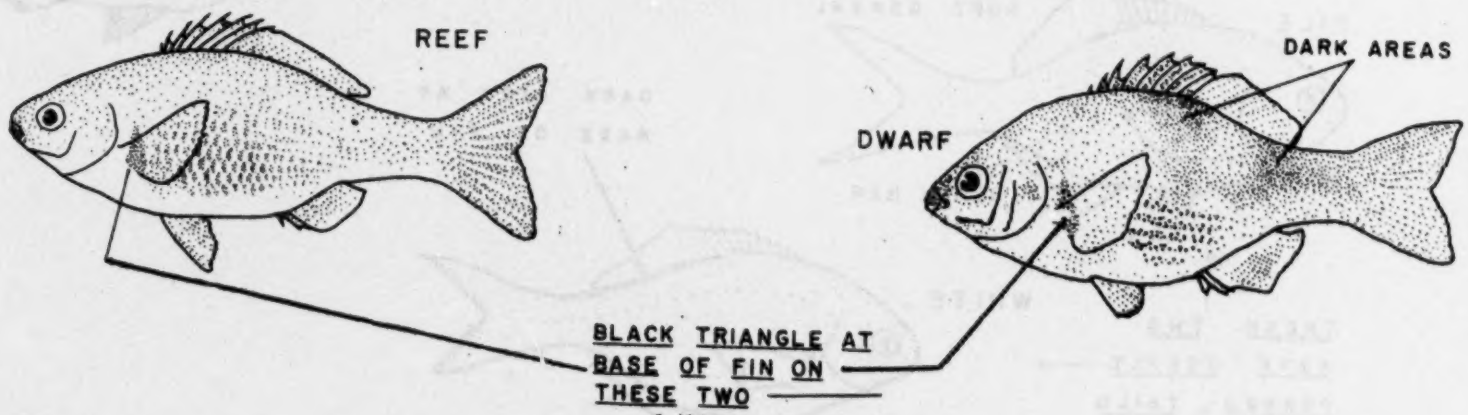
7 — Basic body color pinkish or reddish. 8
Basic body color silver blue, white or silver white. 9

8 — Two chocolate brown spots at base of dorsal fin. *Zalembius rosaceus* (Pink seaperch)
No spots on body, color fading evenly ventrally. *Phanerodon atripes* (Sharpnose seaperch)

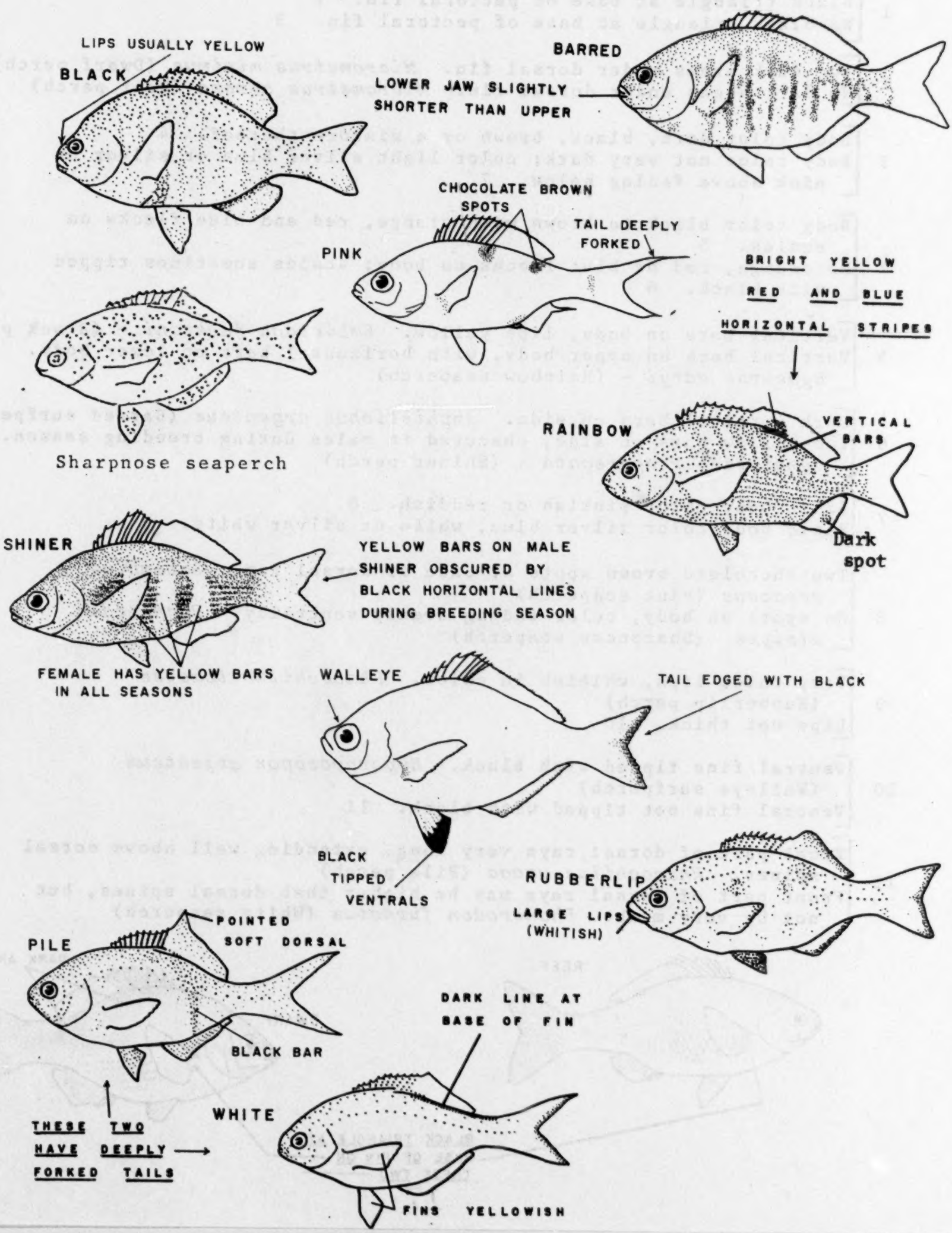
9 — Very thick lips, whitish in color. *Rhacochilus toxotes* (Rubberlip perch)
Lips not thick. 10

10 — Ventral fins tipped with black. *Hyperprosopon argenteum* (Walleye surfperch)
Ventral fins not tipped with black. 11

11 — Front part of dorsal rays very long, extending well above dorsal spines. *Rhacochilus vacca* (Pile perch)
Front part of dorsal rays may be higher than dorsal spines, but not by very much. *Phanerodon furcatus* (White seaperch)



Family *EMBIOTOCIDAE* (continued)

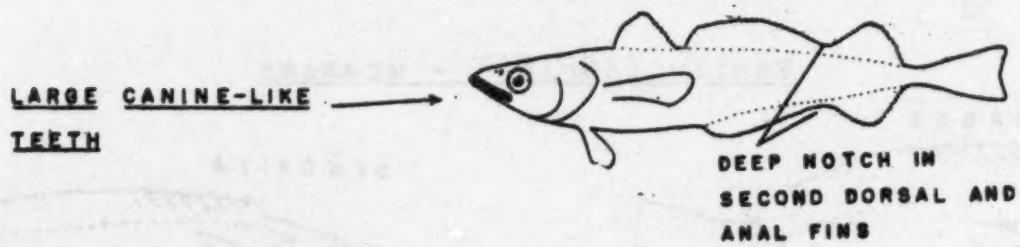


Family *ENGRAULIDAE* - anchovies

1 [Body deep, almost transparent. *Anchoa compressa* (Deepbody anchovy)
  [Body slender, not transparent. *Engraulis mordax* (Northern anchovy)

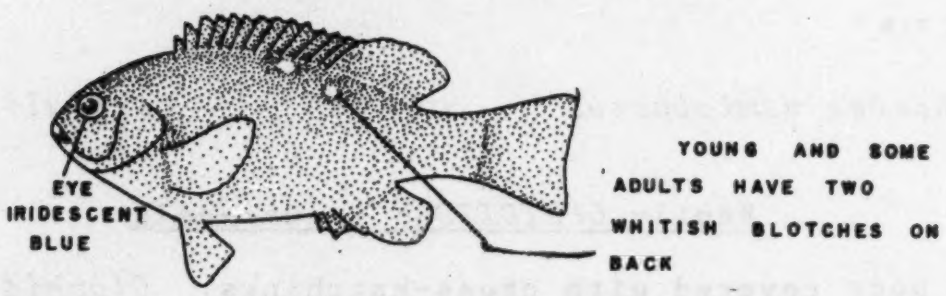
Deepbody anchovy

Family *GADIDAE* - codfishes and hakes



Merluccius productus - Pacific hake

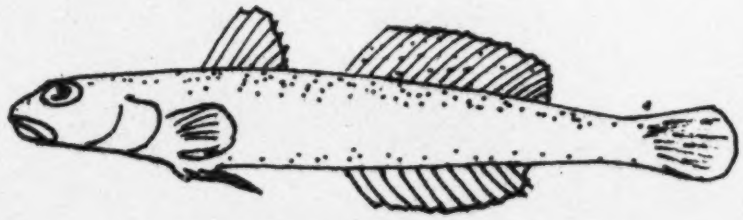
Family *GIRELLIDAE* - nibblers



Girella nigricans - Opaleye

Family *GOBIIDAE* - gobies

1 [Color white to cream color, dark blue spot on first dorsal. *Coryphopterus nicholsi* (Bluespot goby)
  [Color not as above, some dark spots on body. *Lepidogobius lepidus* (Bay goby)

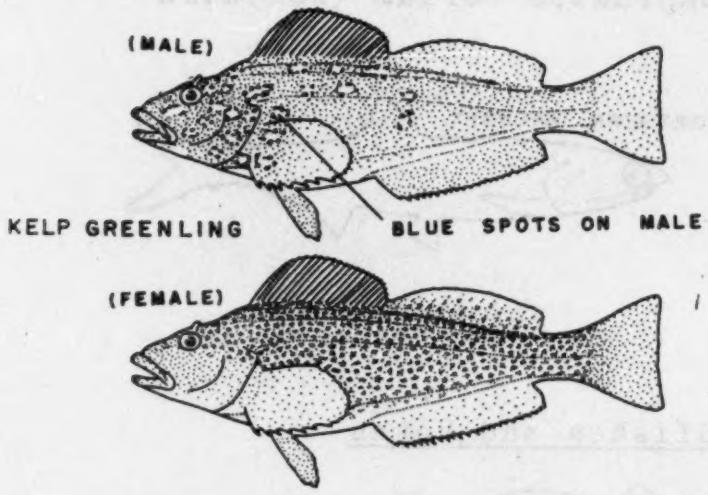


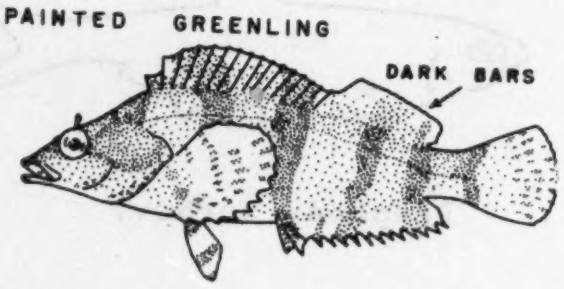
Bluespot goby

Bay goby

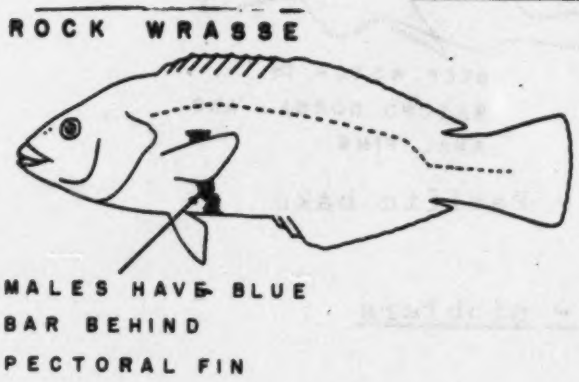
Family *HEXAGRAMMIDAE* - greenlings

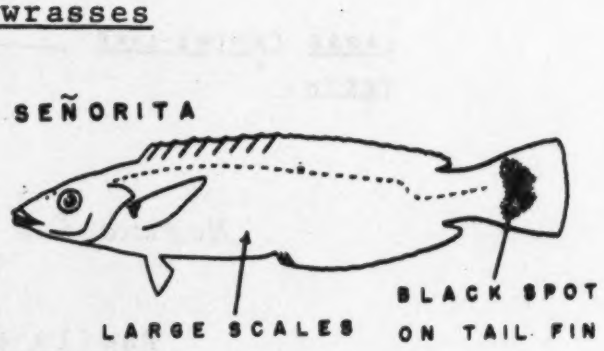
1 [Five lateral lines. *Hexagrammos decagrammus* (Kelp greenling)
[Lateral line single. *Oxylebius pictus* (Painted greenling)





Family *LABRIDAE* - wrasses

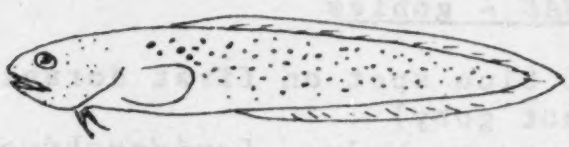




Halichoeres semicinctus — *Oxyjulis californica*

Family *OPHIDIIDAE* - cusk-eels

1 [Sides of body covered with cross-hatchings. *Otophidium scrippsae* (Basketweave cusk-eel)
[Sides of body covered with small round olivaceous spots. *Otophidium taylori* (Spotted cusk-eel)



Spotted cusk-eel

Basketweave cusk-eel

Family *PLEURONECTIDAE* - righteyed flounders

NOTE: Refer to pages 11 & 20 for explanatory drawing of terms used in k

1
- Lateral line single (Sometimes this can be seen easier if you look on the blind side). 2
- Lateral line with an accessory arch. 6

2
- Lateral line with a high arch over the pectoral fin. 3
- Lateral line nearly straight for its entire length. 4

3
- Pectoral fin longer than head, body ovate, caudal fin rounded. *Xystreurys liolepis* (Fantail sole)
- Pectoral fin shorter than head, body somewhat elongate, caudal fin indented. *Paralichthys californicus* (California halibut)

NOTE: Both the fantail sole and the California halibut may have eyes on either side of the head and belong in the family Bothidae, or lefteyed flounders, page 12.

4
- Body extremely slimy, secreting great quantities of mucus, yellow spot usually present on back under side edge of operculum. *Microstomus pacificus* (Dover sole)
- Body only slightly slippery, not necessarily slimy, no yellow spot on operculum. 5

5
- Pectoral fin longer than head, scales moderate in size. *Glyptocephalus zachirus* (Rex sole)
- Pectoral fin shorter than head, scales large and easily rubbed off. *Lyopsetta exilis* (Slender sole)

6
- Dorsal fin with at least five to six rays on blind side and dorsal fin coming close to mouth or extending past the mouth. 7
- Dorsal fin with fewer than five to six rays on blind side, never approaching the mouth. 10

7
- Dorsal fin extending to or past the mouth. *Pleuronichthys decurren* (Curlfin turbot)
- Dorsal fin on blind side not reaching mouth. 8

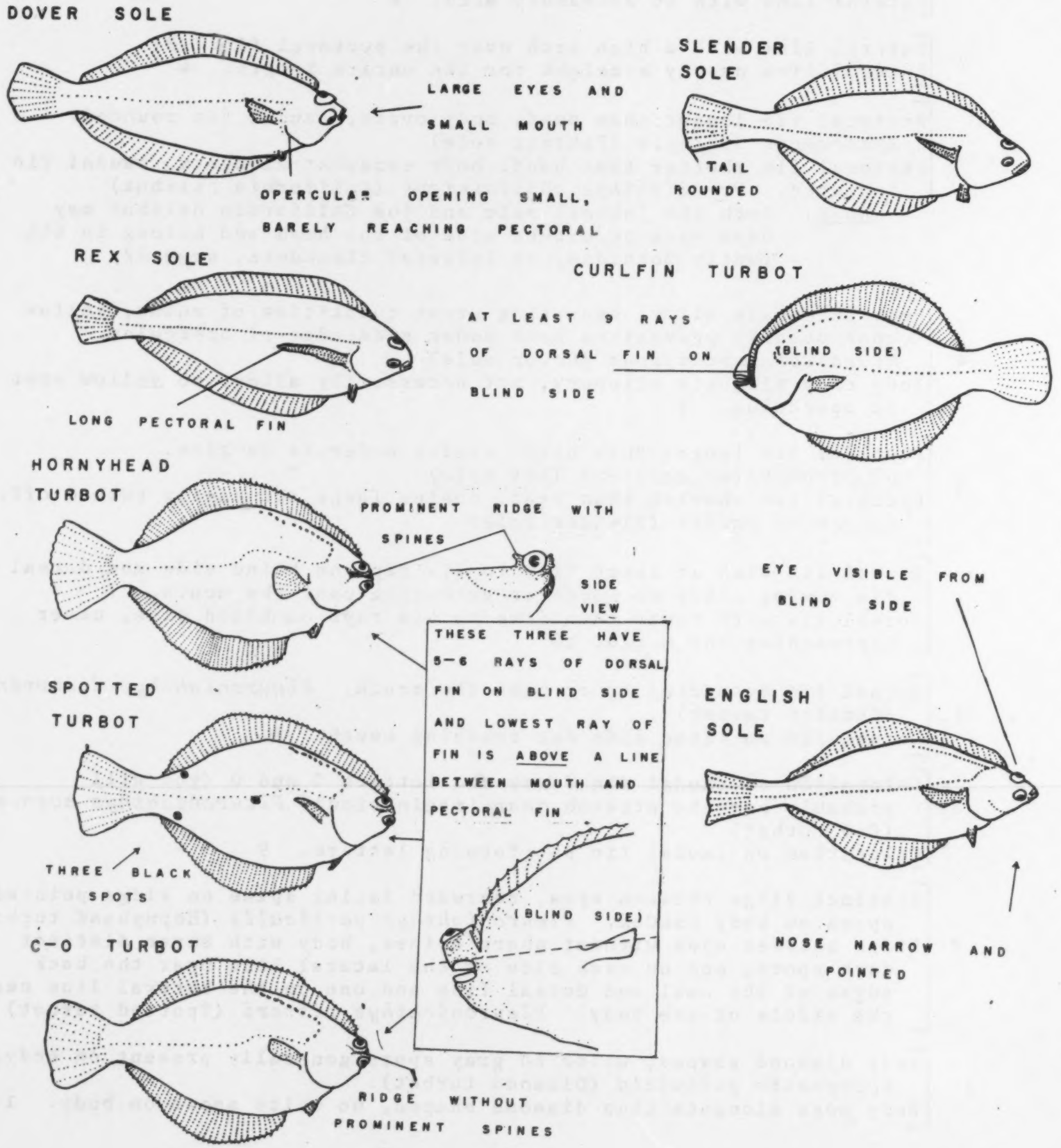
8
- Coloration on caudal fin forms the letters C and O (you will probably have to stretch your imagination) *Pleuronichthys coenos* (C-O turbot)
- Coloration on caudal fin not forming letters. 9

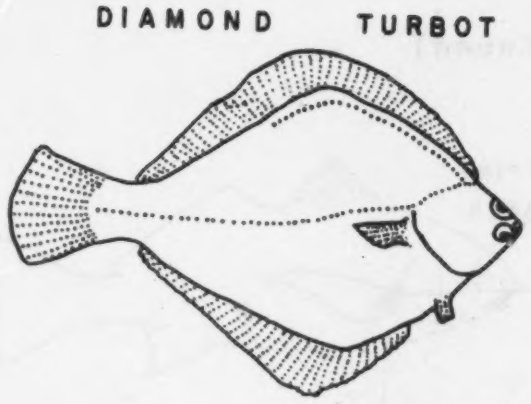
9
- Distinct ridge between eyes, rearward facing spine on ridge pointed spots on body random. *Pleuronichthys verticalis* (Hornyhead turbo
- Ridge between eyes without sharp spines, body with three distinct dark spots, one on each side of the lateral line near the back edges of the anal and dorsal fins and one on the lateral line nea the middle of the body. *Pleuronichthys ritteri* (Spotted turbot)

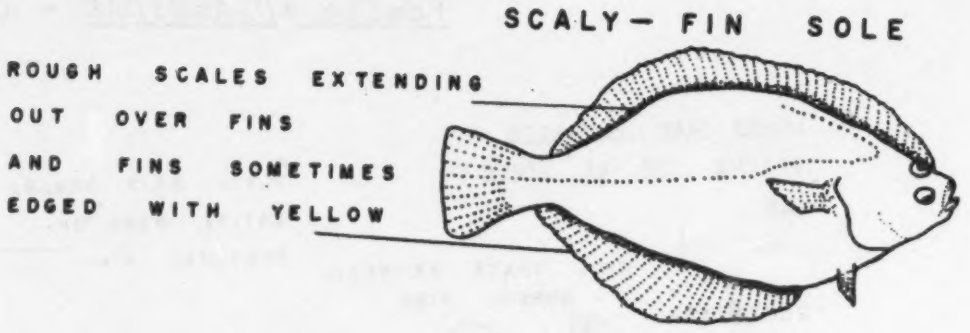
10
- Body diamond shaped, white to gray spots generally present on body. *Hypopsetta guttulata* (Diamond turbot)
- Body more elongate than diamond shaped, no white spots on body. 11

Family *PLEURONECTIDAE* (continued)

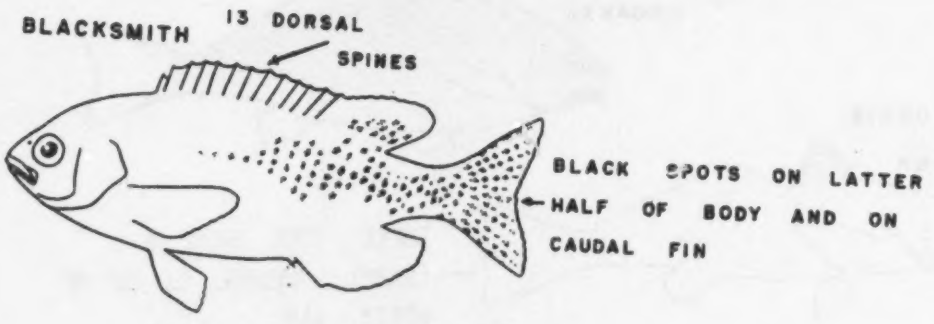
11 [One eye visible from blind side. *Parophrys vetulus* (English sole)
   [Neither eye visible from blind side. *Isopsetta isolepis* (Scalyfin sole)


DOVER SOLE
LARGE EYES AND SMALL MOUTH
OPERCULAR OPENING SMALL, BARELY REACHING PECTORAL
SLENDER SOLE
TAIL ROUNDED
REX SOLE
LONG PECTORAL FIN
CURLFIN TURBOT
AT LEAST 9 RAYS OF DORSAL FIN ON BLIND SIDE
(BLIND SIDE)
HORNYHEAD TURBOT
PROMINENT RIDGE WITH SPINES
SIDE VIEW
THESE THREE HAVE 5–6 RAYS OF DORSAL FIN ON BLIND SIDE AND LOWEST RAY OF FIN IS ABOVE A LINE BETWEEN MOUTH AND PECTORAL FIN
(BLIND SIDE)
EYE VISIBLE FROM BLIND SIDE
ENGLISH SOLE
SPOTTED TURBOT
THREE BLACK SPOTS
NOSE NARROW AND POINTED
C–O TURBOT
RIDGE WITHOUT PROMINENT SPINES

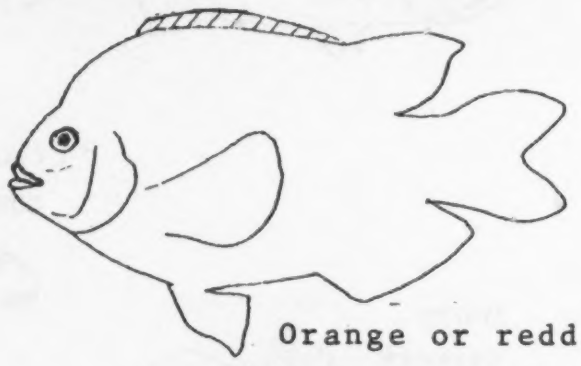




Family *POMACENTRIDAE* - Damselfishes



Chromis punctipinnus
Blacksmith



Hypsypops rudicunda
Garibaldi

Family *SCIAENIDAE* - drums

1. Color tan to blackish with jet black on the gill cover. *Cheilotrema saturnum* (Black croaker)
   Color slate to silver gray. 2

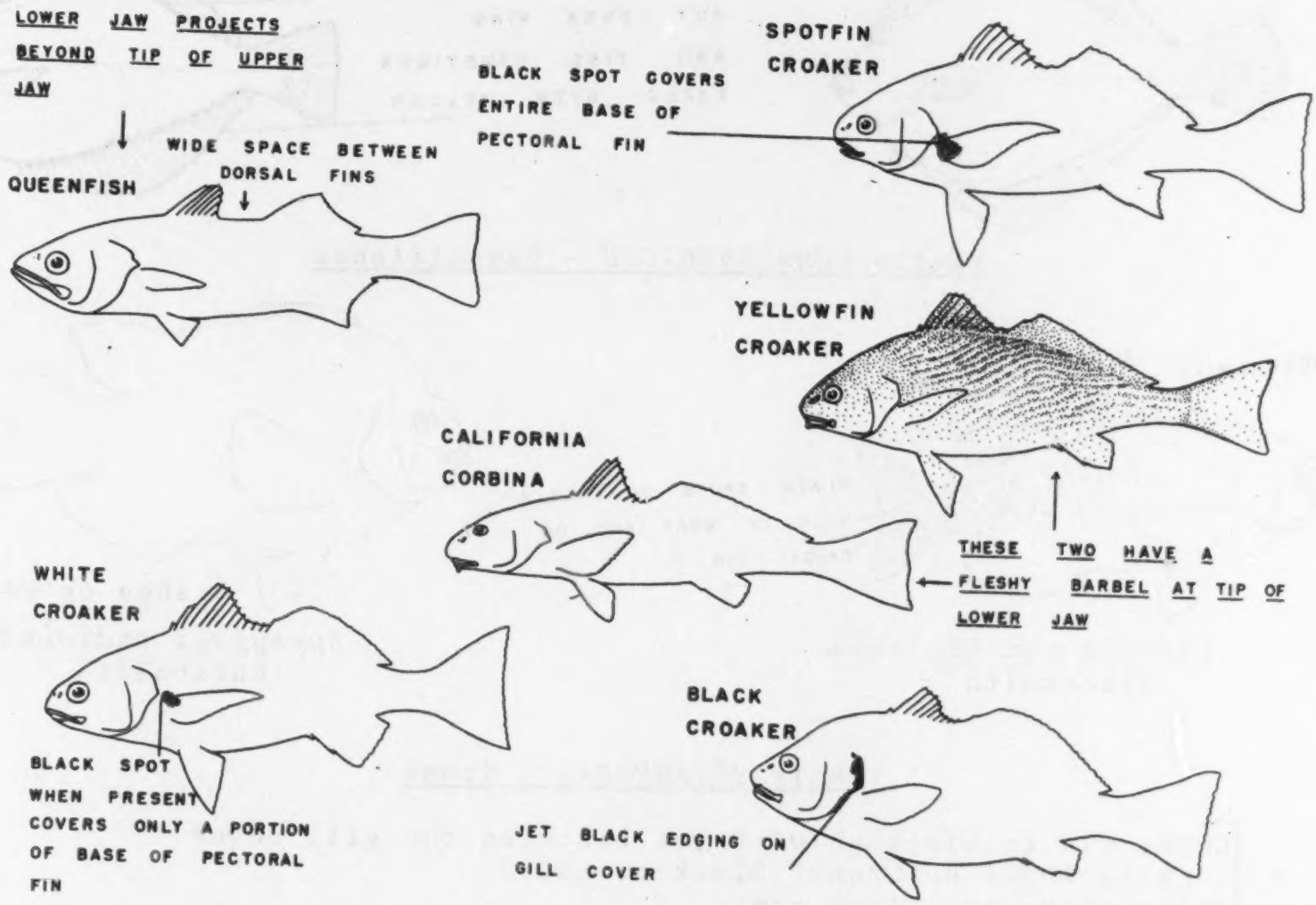
2. Mouth terminal, a wide space between spiny and soft dorsal fins. *Seriphus politus* (Queenfish)
   Mouth on ventral side of head, under snout, no wide space between dorsals. 3

3. Small barbel on chin. 4
   No barbel on chin. 5

4. Two very strong spines at base of anal fin, fins yellowish, swimbladder present, dusky wavy lines on side of body. *Umbrina roncador* (Yellowfin croaker)
   Anal fin with single spine, weak, fins dusky, swimbladder absent, color uniform slate or silver gray above fading into creamy white below. *Menticirrhus undulatus* (California corbina)

5. Black spot completely covering pectoralfin base, less than twelve (usually ten) spines in dorsal fin. *Roncador stearnsi* (Spotfin croaker)
   Black spot on pectoral fin base present or absent, if present, covering only a portion of pectoral fin base, spines in dorsal twelve to fifteen. *Genyonemus lineatus* (White croaker)

Family *SCIAENIDAE* - (continued)


LOWER JAW PROJECTS BEYOND TIP OF UPPER JAW
WIDE SPACE BETWEEN DORSAL FINS
QUEENFISH
BLACK SPOT COVERS ENTIRE BASE OF PECTORAL FIN
SPOTFIN CROAKER
YELLOWFIN CROAKER
CALIFORNIA CORBINA
THESE TWO HAVE A FLESHY BARBEL AT TIP OF LOWER JAW
WHITE CROAKER
BLACK SPOT WHEN PRESENT COVERS ONLY A PORTION OF BASE OF PECTORAL FIN
BLACK CROAKER
JET BLACK EDGING ON GILL COVER

Family *SCORPAENIDAE* - rockfishes and scorpionfishes

Use these figures when identifying rockfishes and scorpionfishes in this key.

1
- Fleshy flaps over eyes and numerous small flaps on almost each scale. *Scorpaena guttuta* (California scorpionfish)
- Not as above, no fleshy flaps on scales. 2

2
- Body color pink with red vertical bars. *Sebastodes rubrivinctus* (Flag rockfish)
- Body not as above. 3

3
- Dark spot on the underside of the operculum. 4
- No dark spot on the underside of the operculum. 16

4
- Peritoneum silvery white or silvery white with black dots. 5
- Peritoneum black, brownish black, or dark gray with black dots. 10

5
- Spines on gill cover absent. 6
- Spines on gill cover present. 7

6
- Mouth and gill cavities white, with some light pink; body color pale pink with faint chocolate brown stripes down sides or, in very young, very light creamy geeen with fairly dark chocolate brown bars on side. *Sebastodes levis* (Cow rockfish)
- Mouth and gill cavities pink, with considerable duskyness, body color red with gray blotches on dorsal part of body, ventral fins edged with black. *Sebastodes miniatus* (Vermilion rockfish)

7
- Mouth and gill cavities mainly white, or whitish, sometimes with considerable duskyness and occasionally with some yellow. 8
- Mouth and gill cavities pink, with considerable dusky areas. *Sebastodes miniatus* (Vermilion rockfish)

8
- Gill rakers short and stubby, body color light chocolate-brown with darker brown spots, fins flesh colored, black spot on upper edge of operculum. *Sebastodes auriculatus* (Brown rockfish)
- Gill rakers fairly long and slender, no dark spot on upper edge of operculum. 9

9
- Body color light yellow-green with irregular dark bars and splotches on body. *Sebastodes dalli* (Calico rockfish)
- Body color pale gray-green to rusty brown, fins dusky pink. *Sebastodes atrovirens* (Kelp rockfish)

10
- Suborbital spines absent. 11
- Suborbital spines present. 12

11
- Body color dusky brown. *Sebastodes entomelas* (Widow rockfish)
- Body color bluish-black. *Sebastodes mystinus* (Blue rockfish)

12
- Spines on gill cover absent. 13
- Spines on gill cover present. 14

13
- Peritoneum black; body color light red with several dark brown blotches on back. *Sebastodes zacentrus* (Sharpchin rockfish)
- Peritoneum light gray with scattered black dots; body color red with some bronze colored spots on upper sides and back. *Sebastodes gilli* (Bronzespotted rockfish)

Family *SCORPAENIDAE* - continued

14
- Mouth and gill cavities red with some dusky, sometimes with some yellow. *Sebastodes proriger* (Redstripe rockfish)
- Mouth and gill cavities white or dusky white, some pink and yellow may be present. 15

15
- Body color blue-black. *Sebastodes mystinus* (Blue rockfish)
- Body color dusky-pink with two conspicuous dark red bars on body. *Sebastodes semicinctus* (Halfbanded rockfish)

16
- Suborbital spines absent. 17
- Suborbital spines present. 19

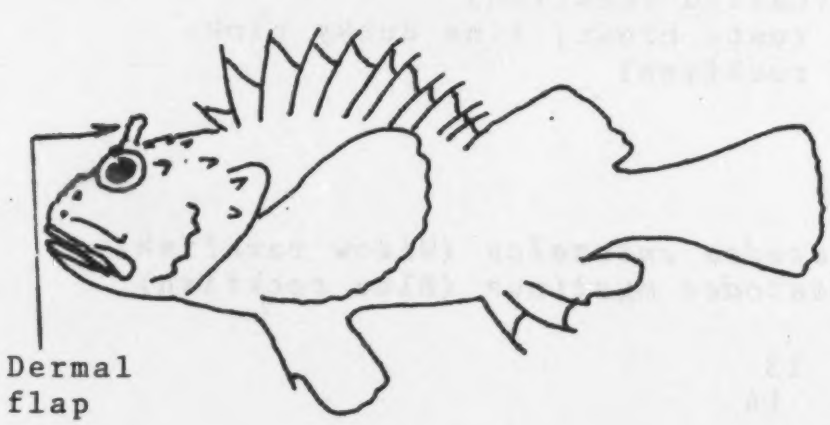
17
- Spines on gill cover present. *Sebastodes elongatus* (Greenstripe rockfish)
- Spines on gill cover absent. 18

18
- Fins dark olive, with some yellow; lower rays of pectoral fins not tinged with pink. *Sebastodes serranoides* (Olive rockfish)
- Fins dusky and yellow; lower rays of pectoral fin tinged with pink. *Sebastodes flavidus* (Yellowtail rockfish)

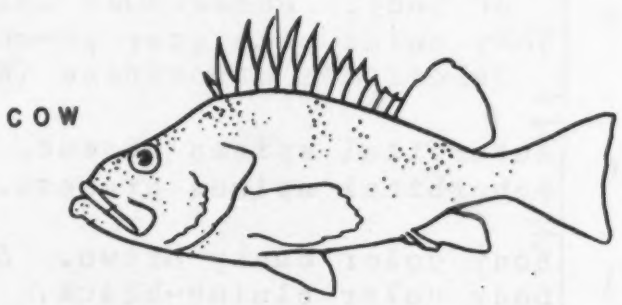
19
- Spines on gill cover present. 20
- Spines on gill cover absent. 21

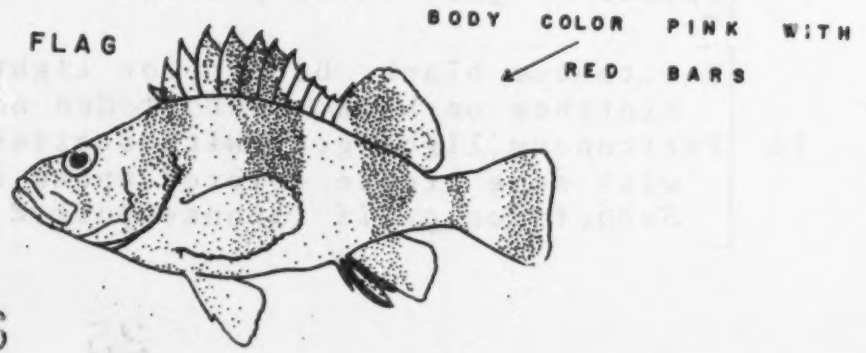
20
- Body color dark red with four or five whitish blotches on upper body. *Sebastodes rosaceus* (Rosy rockfish)
- Body color yellow-pink with some light green; several vague dusky blotches on back. *Sebastodes saxicola* (Stripetail rockfish)

21
- Body color light olive-brown on top, becoming pink on sides; small fish have small brown spots on the sides. *Sebastodes paucispinis* (Bocaccio)
- Body color pinkish-red; fins pink; young with light-olive on back. *Sebastodes goodei* (Chilipepper)

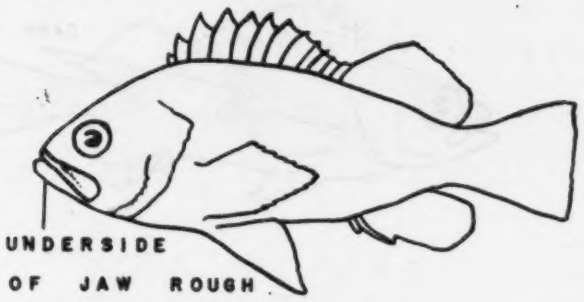


Scorpionfish

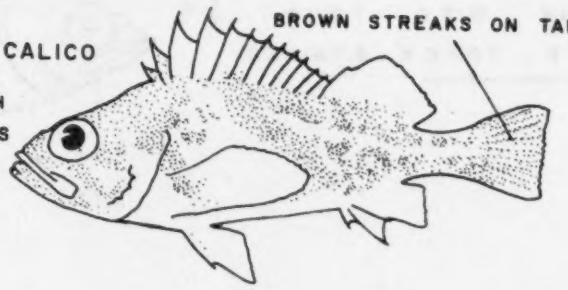


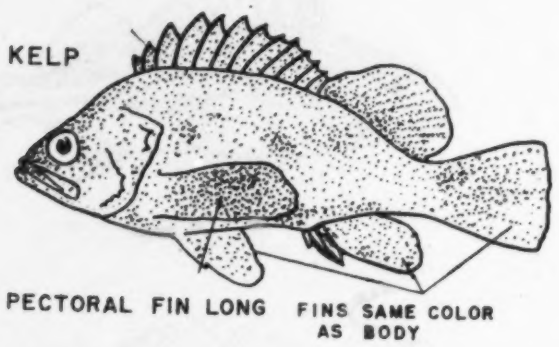


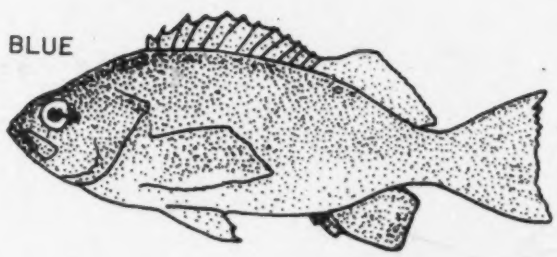
VERMILION

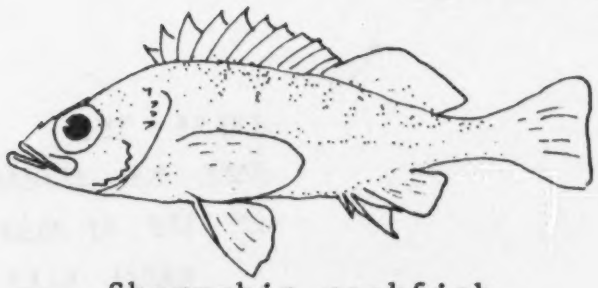


UNDERSIDE OF JAW ROUGH WHEN RUBBED FORWARD

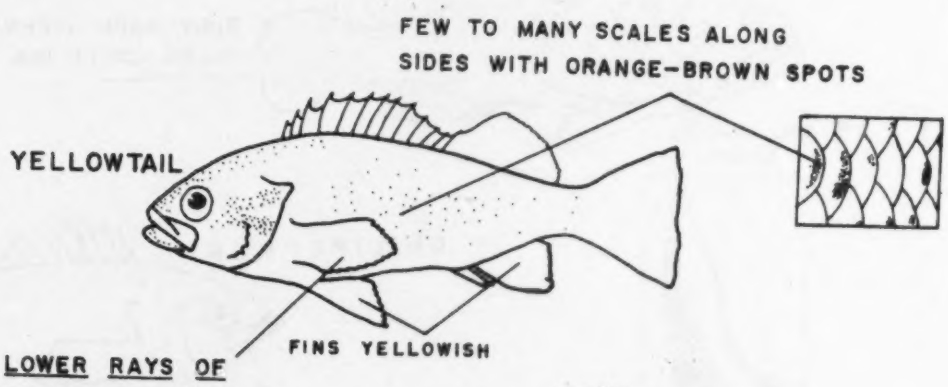


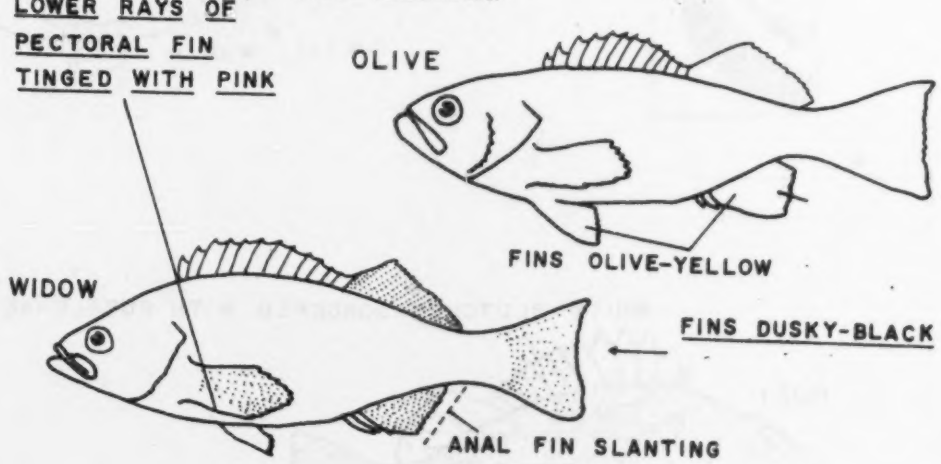


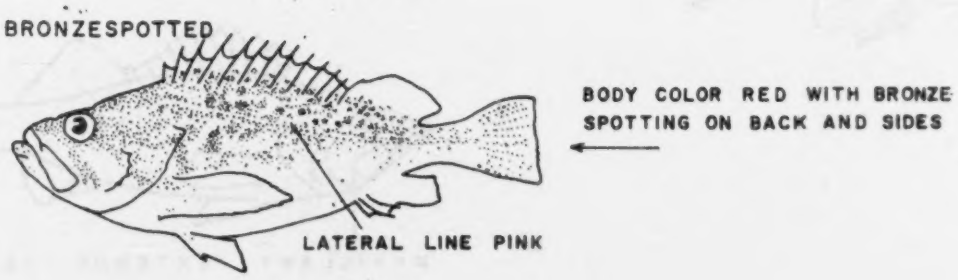


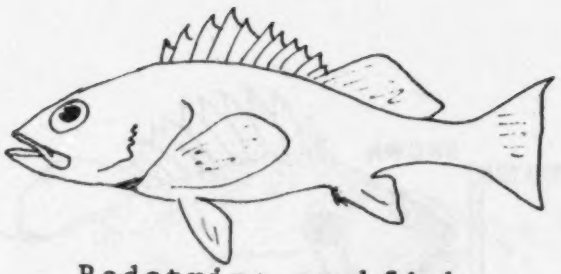


Sharpchin rockfish





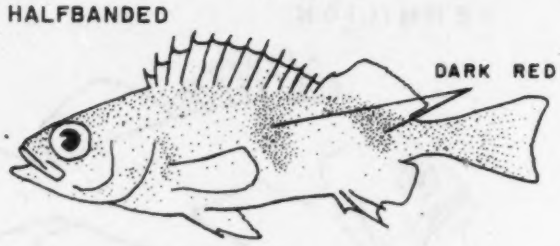




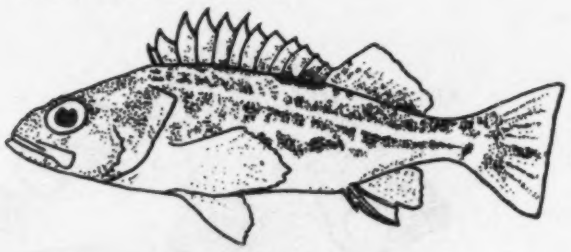
Redstripe rockfish

HALFBANDED

DARK RED BARS

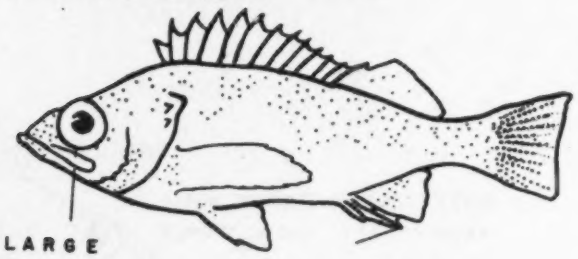


GREENSTRIPED



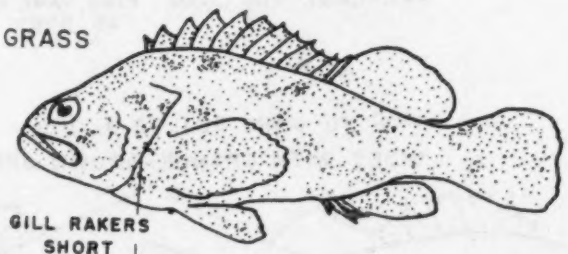
PINK WITH FOUR DARK GREEN STRIPES

STRIPETAIL



LARGE EYE

GRASS

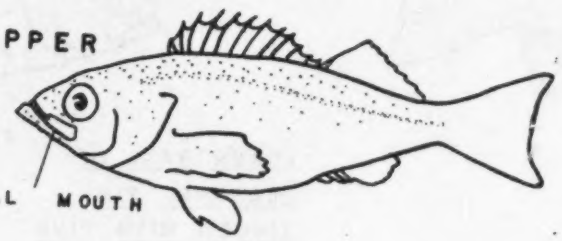


BODY DARK GREEN WITH PALER MOTTLING

GILL RAKERS SHORT

GREEN STRIPES ON TAIL

CHILIPEPPER

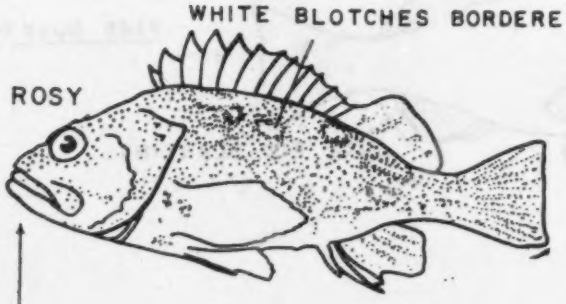


SMALL MOUTH

THESE TWO HAVE NO SPINES ON TOP OF HEAD ABOVE EYES

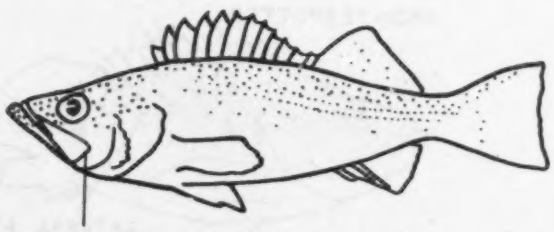
WHITE BLOTCHES BORDERED WITH PURPLE-RED

ROSY



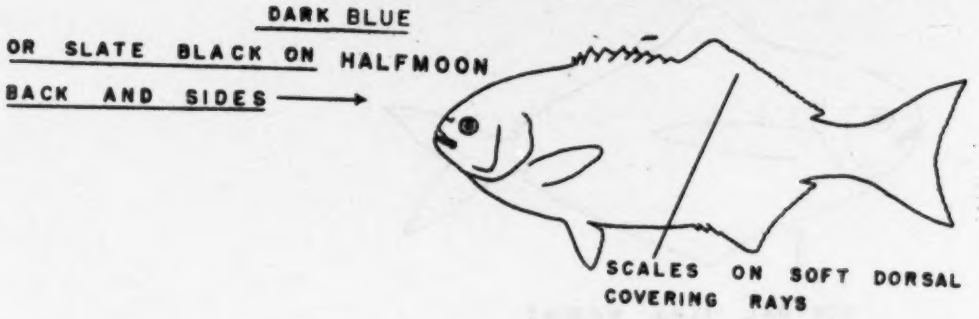
NO SCALES ON UNDERSIDE OF JAW

BOCACCIO



MAXILLARY EXTENDS TO BEHIND EYE

Family *SCORPIDAE* - halfmoons



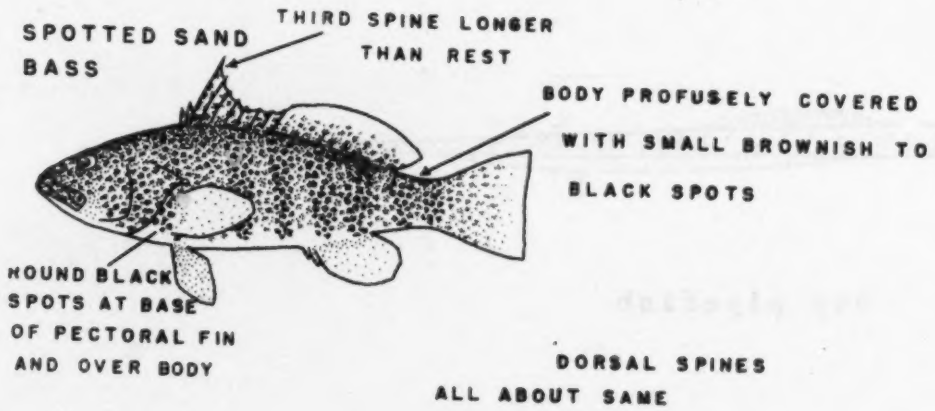
Medialuna californiensis - Halfmoon

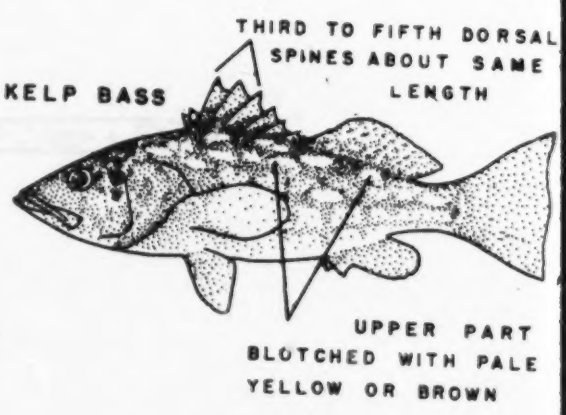
Family *SERRANIDAE* - sea basses

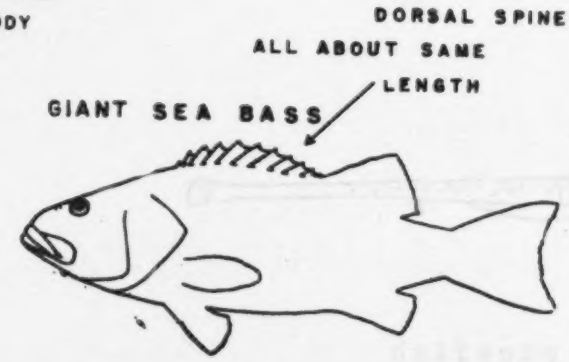
1
- All the dorsal spines approximately the same length, color in young red with black spots, turning brownish-black with age, white spots on body. *Stereolepis gigas* (Giant sea bass)
- Dorsal spines of unequal length. 2

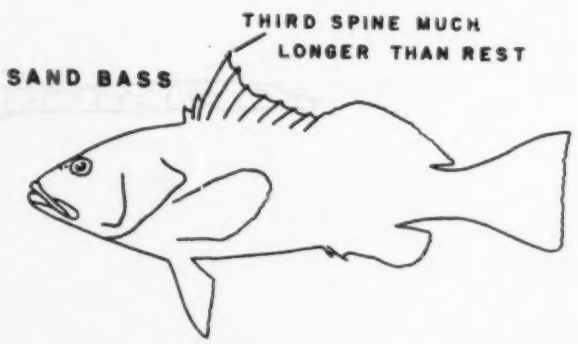
2
- Body densly covered with small black or brown spots. *Paralabrax maculatofasciatus* (Spotted sand bass)
- Body not as above. 3

3
- Third dorsal spine longer than second and fourth, small gold spots on head. *Paralabrax nebulifer* (Sand bass)
- Third and fourth dorsal spines approximately the same length, no gold spots on head. *Paralabrax clathratus* (Kelp bass)

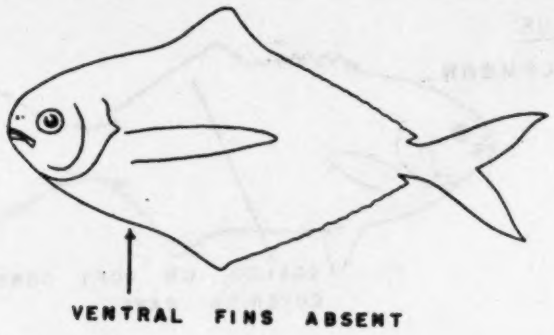








Family *STROMATEIDAE* - butterfishes



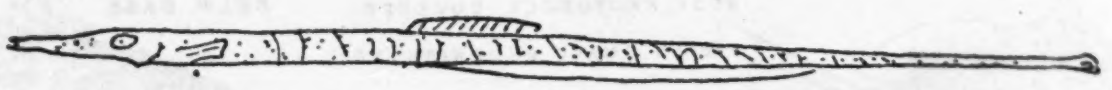
Palometa simillima - Pacific pompano

Family *SYGNATHIDAE* - pipefishes and seahorses

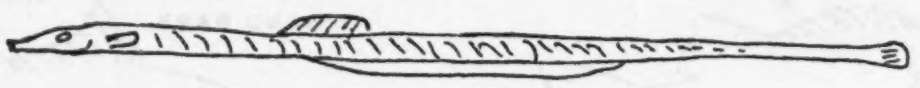
1
- Dorsal rays 30 or more. 2
- Dorsal rays 29 or less. 4

2
- Dorsal rays 39 to 46, color olivaceous to reddish brown, fading to light yellow below. *Syngnathus californiensis* (Kelp pipefish)
- Dorsal rays 30 to 32, color brown to green. *Syngnathus griseolineatus* (Bay pipefish)

3
- Dorsal rays 20 to 23, color pale. *Syngnathus arctus* (snubnose pipefish)
- Dorsal rays 26 to 34, body with bars about every four body rings. *Syngnathus auliscus* (Barred pipefish)

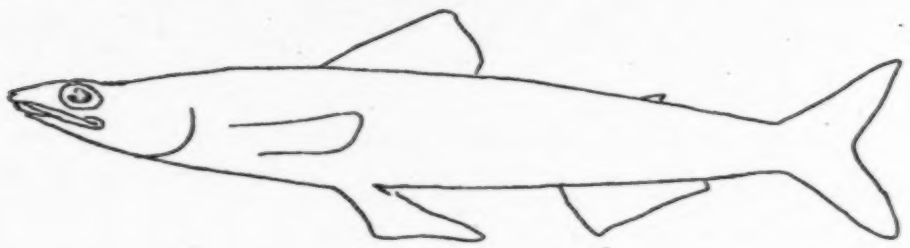


Bay pipefish



Snubnose pipefish

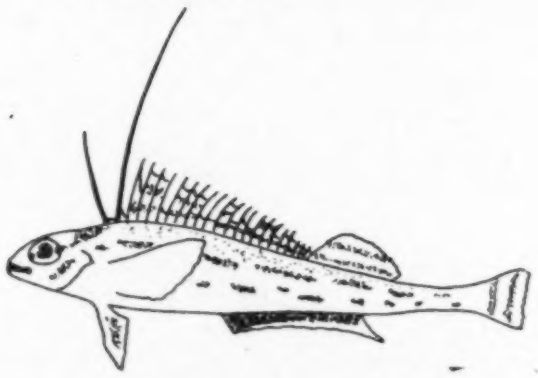
Family *SYNODONTIDAE* - lizardfishes



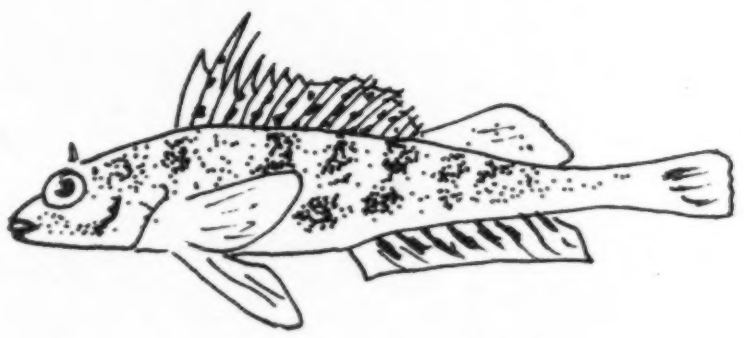
Synodus lucioceps - California lizardfish

Family *ZANIOLEPIDAE* - combfishes

1 [First dorsal spines very elongate. *Zaniolepis latipinnis* (Longspine combfish)
First dorsal spines short. *Zaniolepis frenata* (Shortspine combfish)

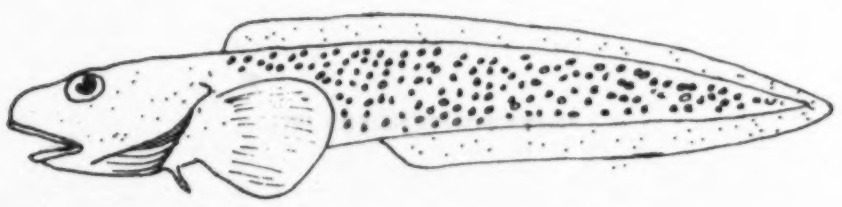


Longspine combfish



Shortspine combfish

Family *ZOARCIDAE* - eelpouts



Lycodopsis pacificus - Black belly eelpout